AMENDMENTS TO THE CLAIMS

1. (Original) An electric syringe for injecting a dental anesthetic by pressing a rubber plug of a cartridge filled with an anesthetic, thereby injecting the anesthetic from a needlepoint of a dental needle connected to the cartridge, the electric syringe comprising:

a push member configured to press and move the rubber plug of the cartridge;

a drive motor configured to generate a drive force;

a transmission mechanism part configured to transmit the drive force to the push member; and

a control unit configured to control a moving of the push member by controlling the drive motor,

wherein the control unit controls the drive motor to move the push member to gradually increase an injection speed of the anesthetic in the beginning of the injection and to move the push member to inject the anesthetic in a constant injection speed after a predetermined time has elapsed.

2. (Original) The electric syringe as claimed in claim 1 further comprising a sound output unit configured to output a sound,

wherein the control unit controls the sound output unit to output the sound during the injection of the anesthetic.

3. (Original) The electric syringe as claimed in claim 1 further comprising an operation switch having a window hole portion and a sensor of a light reflection type in which detects whether or not the window hole portion is closed,

wherein the control unit starts the injection of the anesthetic when the sensor of the operation switch detects that the window hole portion is closed.

4. (Original) The electric syringe as claimed in claim 3, wherein the operation switch comprises:

a first operation switch having a first window hole portion configured to be closed by a hand gripping the electric syringe, and a first sensor of a light reflection type in which detects whether or not the first window hole portion is closed; and

a second operation switch having a second window hole portion configured to be closed by a finger, and a second sensor of a light reflection type in which detects whether or not the second window hole portion is closed, and

wherein the control unit starts the injection of the anesthetic when both of the first and the second window hole portions are detected by the first and the second sensor to be closed.

5. (Original) The electric syringe as claimed in claim 1, wherein the transmission mechanism part comprises:

a lock removing button arranged on a cover case of the electric syringe; and

a clutch mechanism portion configured to release the transmission of the drive force when the lock removing button is operated.

6. (Original) The electric syringe as claimed in claim 5 further comprising:

a cartridge holder connecting part; and

a cartridge holder configured to hold the cartridge and configured to be connectable to the cartridge holder connecting part.

7. (Original) The electric syringe as claimed in claim 6, wherein the cartridge holder is configured to hold each one of a plurality of cartridges having different lengths, and configured to be connectable to the cartridge holder connecting part.

8. (Original) The electric syringe as claimed in claim 7, wherein the cartridge holder is configured to hold each one of a first cartridge filled with 1.0 ml of the anesthetic and a second cartridge filled with 1.8 ml of the anesthetic.

9. (Original) The electric syringe as claimed in claim 6, wherein the lock removing button is configured to be operated in accordance with the connection of the cartridge holder to the cartridge holder connecting part.

10. (Original) The electric syringe as claimed in claim 6 further comprising a biasing member configured to apply a biasing force to the push member,

wherein the push member is configured to move in a state contacted with the rubber plug of the cartridge in accordance with the connection of the cartridge holder to the cartridge holder connecting part, and

wherein the push member is configured to be in contact with the rubber plug at a constant pressure by the biasing force applied by the biasing member when the cartridge holder is connected to the cartridge holder connecting part.

11. (Original) The electric syringe as claimed in claim 1 further comprising:

a cartridge holder connecting part; and

a cartridge holder configured to hold the cartridge and configured to be connectable to the cartridge holder connecting part.

12. (Currently amended) The electric syringe as claimed in claim 11, wherein the cartridge holder is configured to hold ~~each~~ one of a plurality of cartridges having different lengths, and configured to be connectable to the cartridge holder connecting part.

13. (Currently amended) The electric syringe as claimed in claim 12, wherein the cartridge holder is configured to hold ~~each~~ one of a first cartridge filled with 1.0 ml of the anesthetic and a second cartridge filled with 1.8 ml of the anesthetic.

14. (Original) The electric syringe as claimed in claim 1, further comprising a cartridge holder connecting part configured to be connected with a cartridge holder configured to hold the cartridge and having a groove on an outer peripheral surface thereof,

wherein the cartridge holder connecting part comprises:

a connecting ring having a tube body formed in a rotary body shape;

a ball pusher biasing member arranged in the tube body of the connecting ring;

a ball pusher arranged in the tube body of the connecting ring, applied with a biasing force by the ball pusher biasing member in the opposite direction to a connection direction of the cartridge holder, and formed in a cylindrical body shape having a multi-stage-shaped outer peripheral surface;

a mounting and removing ring biasing member arranged outside of the tube body of the connecting ring;

a mounting and removing ring arranged outside the tube body of the connecting ring, applied with a biasing force by the mounting and removing ring biasing member in the opposite direction to the connection direction of the cartridge holder, and formed in a cylindrical body shape having an inner peripheral surface with a groove;

a first ball arranged in the connecting ring in a manner to be movable between the multi-stage-shaped outer peripheral surface of the ball pusher and the grooved inner peripheral surface of the mounting and removing ring; and

a second ball arranged in the connecting ring in a manner to be movable between the grooved outer peripheral surface of the cartridge holder and the grooved inner peripheral surface of the mounting and removing ring,

wherein when the cartridge holder is connected, the cartridge holder presses against the ball pusher and thus the cartridge holder and the ball pusher are moved in linking with each other to thereby move the first ball to the ball pusher side and the second ball to the cartridge holder side, and

wherein when the cartridge holder is connected, the mounting and removing ring released from the movement restraint by the first ball is moved in the opposite direction to the cartridge insertion direction to press against the first and second balls, thereby connecting the cartridge holder to the cartridge holder connecting part.